

REMARKS

By this amendment, no claims have been added or cancelled. Claims 1, 5, 7, 16, 20, 22 have been amended. Amendments to the claims are made herein without acquiescence to the position of the Office Action or prejudice to pursue the claims as originally filed in a continuation application. Hence, Claims 1-32 are pending in the application.

SUMMARY OF THE REJECTIONS

Claims 1-32 were rejected under 35 U.S.C. § 102(e) as allegedly being unpatentable over *Viswanadham*.

The rejections are respectfully traversed.

THE PENDING CLAIMS ARE PATENTABLE OVER *VISWANADHAM*

As explained in further detail below, it is respectfully submitted that each of the pending claims recites at least one element that is not disclosed, taught, or suggested by the cited art.

A. CLAIMS 1-4, 16-19, AND 31-32

Claim 1 recites the features of:

“A machine-implemented method for sending packets, comprising the steps of: communicating, from an application to an operating system, a policy for manipulating packets,
wherein the policy specifies at least one of (a) redirection needs of the application, (b) replication needs of the application, (c) packet aggregating needs of the application, and (d) packet splitting needs of the application; and
in response to receiving packets at the operating system, the operating system modifying the packets based on the policy without intervention of the application.” (emphasis added)

At least the above-bolded features of Claim 1 are not disclosed, taught, or suggested by *Viswanadham*.

The approach for Claim 1 provides an advantageous method for sending packets from an origin to a destination. In the approach of Claim 1, a policy for manipulating packets is communicated from an application to an operating system. For example, the application may be a firewall or a proxy server. The policy specifies at least one of (a) redirection needs of the application, (b) replication needs of the application, (c) packet aggregating needs of the application, and (d) packet splitting needs of the application. In response to receiving packets at the operating system, the packets are modified based on the policy without intervention of the application. Advantageously, when the operating system receives packets intended for another recipient, the operating system may modify the packets based on the policy without further involvement by the application. Thus, the time and resources involved in context switching between the operating system and the application may be avoided.

Such an approach is in sharp contrast to the approach of *Viswanadham*. *Viswanadham* is directed to a switching device that is configured to perform routing at OSI layer 3, switching at OSI layer 2, and supporting multiple interfaces at OSI layer 1. To the extent that the approach of *Viswanadham* teaches a policy for manipulating packets, that policy is maintained by a software application. Importantly, the *Viswanadham* reference is directed towards implementing functionality performed by integrated circuits, a reduced instruction set (RISC) processor, and software, but is not directed towards implementing functionality in an operating system. Not only does the entire disclosure of *Viswanadham* fail to suggest how an operating system may be used in the approach of *Viswanadham*, but the phrase “operating system” does not appear once in the reference.

The Office Action argues:

it is inherent that the policy for manipulating packets must be contained in the software application and that the operating system [e.g., the RISC processors 10, 12] performs that policy through the instructions in the software application.

The Applicant whole-heartedly agrees with the above statement, in that the prior art teaches that (1) operating systems perform actions at the direction of applications, and (2) traditionally, the policy for manipulating packets is contained in the application. In fact, this is one of the problems that the Applicant's invention solves. Specifically, because the policy for manipulating packets is contained in the application in the prior art, time and resources must be devoted in context switching between the operating system and the application when the application makes calls to enforce the policy. On the other hand, Claim 1 defines an approach where this context switching may be avoided due to the claimed features expressly recited therein.

In view of the fundamental differences between the approach of Claim 1 and that of *Viswanadham*, the element of "communicating, from an application to an operating system, a policy for manipulating packets" is clearly not disclosed, taught, or suggested by *Viswanadham*. The portion of *Viswanadham* cited to show this element (Col. 2, lines 60-65) merely states, *in toto*:

Preferred software functions include: dynamic Internet Protocol (IP) routing, (e.g., RIP, RIPv2, OSPF); layer 2 support (e.g., 802.1D STP); configuration support (e.g., enable/disable Layer 2 or Layer 3 support on per-port basis; ports can be grouped into broadcast domains; flexible subnet configuration); network management; (e.g., SNMP, HTML, Telnet, TFTP, DHCP support).

Significantly, the portion of *Viswanadham* cited above lacks any discussion of communicating anything from an application, let alone communicating, from an application to an operating system, a policy for manipulating packets as required by this element.

Equally important is the observation that the cited portion of *Viswanadham* lacks any discussion of the concept of an operating system. At best, the cited portion of *Viswanadham* lists several examples of functions of software that is stored in a RISC processor of a switch element, but the cited portion, as well as the entire disclosure of *Viswanadham*, lacks any suggestion of an operating system that receives a policy from an application.

While the Applicant agrees with the Office Action that the approach of *Viswanadham* may implicitly involve the use of an operating system, there is no suggestion in *Viswanadham* of an application communicating a policy for manipulating packets to an operating system. Further, the Applicant agrees with the Office Action's observation that, in prior art systems, "it is inherent that the policy for manipulating packets must be contained in the software application." Thus, since the policy for manipulating packets must be contained in the software application in prior approaches, the implicit use of an operating system cannot be analogous to "communicating, from an application to an operating system, a policy for manipulating packets" as featured in Claim 1.

For at least the above reasons, it is respectfully submitted that the element of "communicating, from an application to an operating system, a policy for manipulating packets" is not disclosed, taught, or suggested by *Viswanadham*.

Claim 1 also recites the feature of "in response to receiving packets at the operating system, the operating system modifying the packets based on the policy without intervention of the application." The Office Action acknowledges that *Viswanadham* teaches the use of a policy for manipulating packets contained in the software application. As a result, when packets are received by switching device of *Viswanadham*, the packets cannot be modified by the operating system based on the policy without the intervention of the software application

that contains the policy. As a result, this feature also cannot be disclosed, taught, or suggested by *Viswanadham*.

As one or more elements featured in Claim 1 are not disclosed, taught, or suggested by *Viswanadham*, Claim 1 is patentable over the cited art and is in condition for allowance.

Claim 16 contains limitations similar to that of Claim 1, except that Claim 16 is recited in computer-readable medium format. Consequently, for at least the reasons given above with respect to Claim 1, it is respectfully submitted that Claim 16 is patentable over the cited art and is in condition for allowance.

Claims 2-4, 17-19, and 31-32 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 2-4, 17-19, and 31-32 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 2-4, 17-19, and 31-32 introduces one or more additional limitations that independently render it patentable.

For example, Claims 31 and 32 feature the elements of “communicating, from the application to the operating system, a second policy for manipulating packets” and “at the operating system, modifying a second set of packets based on the second policy while the operating system is still configured to modify the first set of packets based on the first policy.” No portion of *Viswanadham* discloses, teaches, or suggests this combination of elements.

B. CLAIMS 5-6 AND 20-21

Claim 5 recites the features of:

“A machine-implemented method for sending packets in a computer system, comprising the steps of:
communicating, from an application to hardware, a policy for manipulating packets,

wherein the policy specifies at least one of (a) redirection needs of the application, (b) replication needs of the application, (c) packet aggregating needs of the application, and (d) packet splitting needs of the application; and

in response to receiving packets at the hardware, the hardware modifying the packets based on the policy without intervention of the application.” (emphasis added)

At least the above-bolded features of Claim 5 are not disclosed, taught, or suggested by *Viswanadham*.

The approach for Claim 1 provides an advantageous method for sending packets from an origin to a destination. In the approach of Claim 1, a policy for manipulating packets is communicated from an application, e.g., a firewall or a proxy server, to hardware, such as a router. The policy specifies at least one of (a) redirection needs of the application, (b) replication needs of the application, (c) packet aggregating needs of the application, and (d) packet splitting needs of the application. In response to receiving packets at the hardware, the hardware modifies the packets based on the policy without intervention of the application. Advantageously, when the operating system receives packets intended for another recipient, the hardware may modify the packets based on the policy without further involving the application. Thus, the time and resources involved in context switching between the hardware and the application may be avoided.

In view of the fundamental differences between the approach of Claim 1 and that of *Viswanadham*, the element of “communicating, from an application to hardware, a policy for manipulating packets” is clearly not disclosed, taught, or suggested by *Viswanadham*. The portion of *Viswanadham* cited to show this element (Col. 2, lines 60-65; FIG. 10A, hardware block, Col. 15, lines 49-51) discusses functions that may be performed by an application, but lacks any discussion of hardware modifying packets without intervention of an application. The Office Action also cites the Transmit Queue Management Block 154 to show this element,

but while the Transmit Queue Management Block 154 is a hardware block for managing transmit queue functions for switch circuit 20, *Viswanadham* lacks any suggestion that the Transmit Queue Management Block 154 receives a policy from any entity, let alone an application. Additionally, the cited portion of *Viswanadham* lacks any discussion of communicating anything, let alone a policy for manipulating packets. As a result, this element is not disclosed, taught, or suggested by *Viswanadham*.

Further, Claim 5 also recites the feature of “in response to receiving packets at the hardware, the hardware modifying the packets based on the policy without intervention of the application.” However, there is no suggestion in the cited portion of *Viswanadham* of hardware, such as the Transmit Queue Management Block 154, modifying packets based on a policy without intervention of an application. For example, the portion of *Viswanadham* cited to show this feature (Col. 3, lines 1-4) merely discusses a variety of software applications. While these software applications may perform actions in conjunction with hardware, there is no suggestion in this portion of *Viswanadham* of hardware modifying packets based on a policy without the intervention of an application. As a result, this element also cannot be disclosed, taught, or suggested by *Viswanadham*.

As at least one element featured in Claim 5 is not disclosed, taught, or suggested by the cited art, Claim 5 is patentable over the cited art and is in condition for allowance.

Claim 20 contains limitations similar to that of Claim 5, except that Claim 20 is recited in computer-readable medium format. Consequently, for at least the reasons given above with respect to Claim 5, it is respectfully submitted that Claim 20 is patentable over the cited art and is in condition for allowance.

Claims 6 and 21 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 6 and 21 is therefore allowable for the

reasons given above for the claim on which it depends. In addition, each of Claims 6 and 21 introduces one or more additional limitations that independently render it patentable.

C. CLAIMS 7-15 AND 22-30

Claim 7 recites the features of:

“A machine-implemented method for sending messages, comprising the steps of:
**creating, by an application, an aggregate message from individual messages
that are to be sent using an operating system service;**
**transmitting the aggregate message from the application to an operating
system with a system call;**
within the operating system, dividing the aggregate message back into individual
messages; and
transmitting the individual messages using the operating system service,
wherein at least one of the individual messages is sent to a different recipient
than another of the individual messages.” (emphasis added)

At least the above-bolded features of Claim 7 are not disclosed, taught, or suggested by
Viswanadham.

The approach for Claim 1 provides an advantageous method for sending messages. In the approach of Claim 1, an aggregate message is created, by an application, from individual messages that are to be sent using an operating system service. The aggregate message is transmitted from the application to an operating system with a system call. Within the operating system, the aggregate message is divided into individual messages. The individual messages are transmitted using the operating system service. At least one of the individual messages is sent to a different recipient than another of the individual messages.

Advantageously, using the approach of Claim 7, a plurality of individual messages may be transmitted from an application to an operating system in a single system call, thereby reducing the number of context switches that must be performed.

Such an approach is in sharp contrast to the teachings of *Viswanadham*. The portion of *Viswanadham* cited to show the above-bolded features (Col. 7, line 32-Col. 8, line 3; Col. 24,

lines 6-10; and Col. 21, lines 43-45) discusses splitting a frame of data into smaller portions, or “slices,” of data, and subsequently reconstituting the original frame of data from the slices of data. The Office Action position appears to rest on the understanding that “it is inherent that groupings of packets can be bigger or smaller than the 64 byte slices, but the packets must be reconstituted in the correct order for unicast/multicast/broadcast to the respective ports via the FE (Office Action, page 10).” Assuming, *arguendo*, that this is true, numerous features of Claim 7 are still not disclosed, taught, or suggested by *Viswanadham*.

Claim 7 requires that the aggregate message is created by an application from individual messages that are to be sent using an operating system service, the aggregate message be transmitted from the application to an operating system with a system call, and the aggregate message is divided within the operating system back into the individual messages.

Viswanadham fails to teach or suggest these features, and the position of the Office Action does not explain how *Viswanadham* teaches or suggests these features.

To illustrate, the transmit slice buffer and the receive slice buffer of *Viswanadham* reside at the same level of the switch circuit 20. However, in Claim 7, the aggregate message is created by an application and the aggregate message is divided within the operating system. The argument of the Office Action ignores these claimed features of Claim 7.

For example, Claim 7 features the element of “creating, by an application, an aggregate message from individual messages that are to be sent using an operating system service.” The cited portion of *Viswanadham* lacks any suggestion of an application creating an aggregate message. Consequently, this element is not disclosed, taught, or suggested by *Viswanadham*.

The cited portion of *Viswanadham* also fails to discuss the concept of transmitting anything to an operating system, let alone transmitting an aggregate message from the application to an operating system with a system call. At best, the cited portion of

Viswanadham merely describes sending slices (portions of a frame) from one buffer to another buffer. However, the slices of *Viswanadham* are not transmitted from an application to an operating system in a system call. Thus, the cited portion of *Viswanadham* fails to disclose, teach, or suggest the element of “transmitting the aggregate message to an operating system with a system call” featured in Claim 7.

Consequently, for at least the above reasons, it is respectfully submitted that one or more elements featured in Claim 7 are not disclosed, taught, or suggested by *Viswanadham*. Thus, it is submitted that Claim 7 is patentable over the cited art and is in condition for allowance.

Claim 22 contains limitations similar to that of Claim 7, except that Claim 22 is recited in computer-readable medium format. Consequently, for at least the reasons given above with respect to Claim 7, it is respectfully submitted that Claim 22 is patentable over the cited art and is in condition for allowance.

Claims 8-15 and 23-30 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 8-15 and 23-30 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 8-15 and 23-30 introduces one or more additional limitations that independently render it patentable.

CONCLUSION

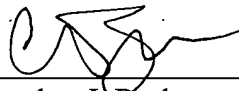
For the reasons set forth above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a formal Notice of Allowance is believed next in order, and that action is most earnestly solicited.

The Examiner is respectfully requested to contact the undersigned by telephone if it is believed that such contact would further the examination of the present application.

Please charge any shortages or credit any overages to Deposit Account No. 50-1302.

Respectfully submitted,

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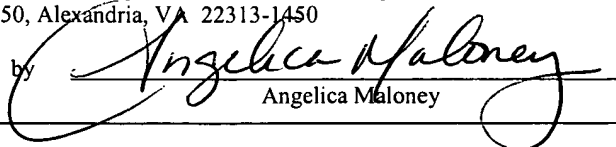
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on November 7, 2005

by


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